

ARCHIVES OF PEDIATRICS

A MONTHLY DEVOTED TO THE
DISEASES OF INFANTS AND CHILDREN

JOHN FITCH LANDON, M.D., Editor

LEADING ARTICLES IN THIS NUMBER

Familial Autonomic Dysfunction.
Riley-Day Syndrome.

Harry R. Litchfield, M.D.
and Harold H. Wagner, M.D. 1

Allergic Toxemia in Infancy.

Bernard L. Ligon, M.D. 6

Presence of Adult Contacts in Infantile
Seborrheic Dermatitis.

A. J. Reiche, M.D. 11

Rumination: A Case Report.

F. H. Clark, M.D. 12

Pediatrics at the Turn of the Century.

Dental Caries as a Cause of Discomfort in Children.
Preventive Measures—Dental Clinics.

Charles Harman, M.D. 20

Indication for Stimulants in Pediatric Practice.

Sara Wali-Kukula, M.D. 29

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*Lee, H. F., in Lull & Kimbrough: *Clinical Obstetrics*, Philadelphia, Lippincott, 1953, pp. 630-632.

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CONTENTS

ORIGINAL COMMUNICATIONS

Familial Autonomic Dysfunction. Riley-Day Syndrome.

HARRY R. LITCHFIELD, M.D.
and HAROLD H. WAGNER, M.D. 1

Allergic Toxemia in Infancy.

BERNARD L. LIPMAN, M.D. 6

Presence of Adult Contacts in Infantile Seborrheic Dermatitis.

A. J. REICHES, M.D. 9

Rumination. A Case Report.

F. H. CLARK, M.D. 12

(Continued on page 4)

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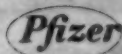
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(Continued from page 2)

PEDIATRICS AT THE TURN OF THE CENTURY

Dental Caries as a Cause of Disease in Children.

Preventive Measures—Dental Clinics.

CHARLES HERRMAN, M.D. 20

Indication for Stimulants in Pediatric Practice.

SARA WELT-KAKELS, M.D. 29

BOOK REVIEWS

Splenin A in Rheumatic Fever.

By ALVIN F. COBURN, M.D., LUCILLE V. MOORE, M.D.

JUDITH WOOD, M.D. and MARY ROBERTS, R.N. 38

Talking with Patients.

By BRIAN BIRD, M.D. 38

ITEMS

Familial Congenital Methemoglobinemia: Clinical and Therapeutic Findings.. 5

Ophthalmia Neonatorum 8

Fatal Poisoning in Children..... 37



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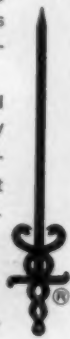
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FAMILIAL AUTONOMIC DYSFUNCTION*

RILEY-DAY SYNDROME

HARRY R. LITCHFIELD, M.D.

AND

HAROLD H. WAGNER, M.D.**

Brooklyn.

The syndrome of familial autonomic dysfunction was first described by Doctors Riley and Day.¹ A number of cases was collected and reported by these investigators.

We believe S. G., a three and one-half month old male infant, admitted to the Beth-El Hospital on November 6, 1954 with a history of failure to gain and inability to suckle, may be added to this series.

Family history reveals a previous pregnancy productive of a stillborn fetus one year prior to the birth of the present child. No gross pathology was noted.

The infant was delivered by cesarean section on July 6, 1954 at the Jewish Hospital in Brooklyn; birth weight 6 pounds, 1 ounce.

At birth, the cry was delayed 30-60 seconds; 2 cc. of yellow fluid was aspirated from his stomach; his breathing was irregular in rate, gasping in nature, mainly thoracic; the cry became active after oxygen insufflation. Physical examination revealed breath sounds diminished over both bases, with rales over the right upper

*Presented at the Pediatric Section Meeting, Kings County Medical Society and Academy of Medicine of Brooklyn, New York, April 25, 1955.

**Resident, Department of Pediatrics, Beth-El Hospital, Brooklyn, New York.

apex; breathing remained irregular; the color cyanotic. However, the condition improved in a few days. He required oxygen for eight days. It was noted that the baby was flaccid. Relaxed ligaments of ankle joints were noted. He was discharged on July 25, 1954; weight 5 pounds, 14 ounces. An x-ray of the chest showed miliary atelectasis of both lungs.

It was noted, by the mother, that from the start he had difficulty with his sucking power. Consequently, the child was placed on semi-solid feedings by teaspoon, which he took with some difficulty. Prior to the infant's hospital admission, there were repeated episodes of high temperature, for no apparent cause, which did not respond to antipyretics, antibiotics or gamma globulin injections. These fevers subsided spontaneously. Upon administration of aspirin for the fever, it was noted that the child perspired excessively and had marked blotching of the skin and frequent attacks of cyanosis, particularly during feedings.

Physical examination on admission revealed a poorly nourished, dehydrated three and one-half month old white male of Jewish extraction. His movements were markedly awkward for a child of his age, a blood pressure determination was unreliable because of patient's age. The child did not lacrimate at all, even after several minutes of crying. His sucking movements were awkward and inefficient. The deep tendon reflexes, as well as the corneal reflexes, were absent. Upon disturbing the child, it was noticed that discrete erythematous blotches appeared on the skin in diffuse distribution. These disappeared spontaneously in two hours. The rest of the physical examination was essentially negative.

Laboratory studies on admission revealed a normal urine, a hemoglobin of 11 gm., 7,000 WBC, differential normal; blood chlorides 100 mEq/L, carbon dioxide 47 volumes per cent in 100 cc.; blood group O-RH negative. X-rays of the chest, flat plate of the abdomen and skull films were all reported as negative.

Course at Hospital. A cut down infusion of the saphenous vein was given to the point of re-hydration over a two-day period. The child was placed on thick cereal and strained meat feedings by teaspoon, which he took fairly well. It was noted that during the course of his hospital stay, the child showed a relative indifference to noxious stimuli. A histamine test done intracutaneously showed no reaction as compared to other children in the ward. The child

was discharged on the 16th hospital day to be cared for at home.

He was readmitted to Kings County Hospital Receiving Ward the latter part of November 1954.

Physical examination revealed a poorly nourished infant in no acute distress, hydration adequate, without corneal reflexes and with a continuous wild chewing movement. Patient's course went continually downhill. Feeding always was difficult; no sucking reflexes. With tube feeding, there were several episodes of severe aspiration pneumonia. Patient frequently became dehydrated and appeared terminal at this time. He rallied on these occasions when given digitalis and cortisone.

On December 7, 1954, a subdural tap was performed with needle penetrating one-half inch at an angle of 45 degrees to skin at the right apex of the anterior fontanelle. The fluid was clear and colorless. About 5 cc. of fluid was removed; Pandy test was negative. Total proteins 29 mg. per 100 cc., chlorides 123 mg. per 100 cc., spinal fluid cells 760 non-crenated.

Kings County Hospital reported chest x-ray, December 13, 1954, showing localized areas of the consolidated lung involving both upper lung fields. The possibility of atelectasis is noted. Lipiodol installation into the stomach reveals lipiodol to pass through the pylorus, and, on the last film, it was noted that a greater portion of the lipiodol had passed into the jejunum.

A subdural tap on December 27, 1954 revealed clear fluid, Pandy test was negative, cells 60 non-crenated, proteins 18 mg. per 100 cc., sugar 62 mg. per 100 cc. and chlorides 127 mg. per 100 cc.

Dr. Richard Day, Director of Kings County Hospital, agreed with our diagnosis of dysautonomia (Riley-Day syndrome), although he could not exclude the possibility that cerebral agenesis was playing a considerable role in the child's difficulties. The staff found absence of corneal and tendon reflexes, but could not confirm our observation of the typical skin blotching. There was some excessive perspiration, the patient could not swallow even though hungry, and when fed adequate quantities of food would occasionally vomit and aspirate the vomitus. He was an extremely difficult child to take care of and lost weight during his stay. His death seemed to be made worse by aspiration. About a week or ten days before death he had some sort of vasomotor collapse which was not fully explained. Within a few hours, however, he seemed to

have recovered from this episode. He died on December 27, 1954 and the hospital was unable to obtain permission for a postmortem examination.

None of the Kings County Hospital studies of spinal fluid, blood chemistry and urine examinations revealed anything of importance.

The major criteria upon which we base our diagnosis are the following:

1. Jewish extraction; 2. hyporeflexia—absence of corneal and tendon reflexes; 3. defective lacrimation; 4. relative indifference to pain; 5. spontaneous skin blotching; 6. labile fevers; 7. excessive perspiration; 8. several attacks of vasomotor collapse with recovery in a few hours.

In addition he showed inability to suckle and awkward movements which are peculiar to this age group in this syndrome.

The following table is a breakdown of the previously described cases by Riley and Day.

Riley-Day Syndrome—1949-1955

No. Cases	Age	Recorded Deaths	Autopsies
33	One to 17 years	12	10

2 autopsies revealed central nervous system lesions; 1 multiple brain abscesses; 1 small cyst in thalamus. Remainder—cause of death was aspiration pneumonia.

SUMMARY

Our case, S. G., fits in fairly well with the thirty-three documented cases of Doctors Riley and Day on "familial autonomic dysfunction." They all presented the picture of emotional instability and motor incoordination without any specific neurological findings. In addition, there was relative indifference to pain, erythematous blotching of the skin, drooling, excessive perspiration, defective lacrimation and hypoactive tendon reflexes.

In the series reported, the encephalograms showed a high percentage of abnormalities and these were suggestive of convulsive disorder, but not specific.

That the condition has familial incidents high in siblings, but is not present in parents or collateral relatives, points to the fact that this may be compatible with a mendelian recessive characteristic. We could not exclude brain injury, cerebral agenesis, or

perhaps the presence of small pheochromocytoma hidden within the adrenal or solid organs.

These findings, with the exception of drooling and defective lacrimation, are indistinguishable from reported cases of pheochromocytoma².

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FAMILIAL CONGENITAL METHEMOGLOBINEMIA: CLINICAL AND THERAPEUTIC FINDINGS. T. Chiaron and F. Bonat. (*Minerva med.* 46:53-61; Jan. 13, 1955). Familial congenital methemoglobinemia was found in two sisters, 18 and 13 years old, who were admitted to the cardiosurgical clinic of the University of Turin with a diagnosis of congenital heart disease. Although signs of definite heart impairment had not been present in these patients, the diagnosis was suggested by the fact that cyanosis had been present in both since their birth. The presence of methemoglobin in the blood of both patients was ascertained by spectrophotometric studies. Methemoglobin was not found in the blood of the parents and a brother of the patients, nor had the four grandparents (all dead) presented symptoms ascribable to methemoglobinemia. This agrees with the hypothesis that the condition may be transmitted as a recessive characteristic. The patients, who were followed for more than two years, were treated with methylene blue, ascorbic acid, and cytochrome C, and they were benefited. According to these authors, methylene blue should be used for toxic methemoglobinemias that are so pronounced as to endanger severely the functions of the organism. Ascorbic acid, in the diet as well as in the form of a drug, should be used for idiopathic congenital forms of the condition. The less prompt and less complete action of this vitamin with respect to that of methylene blue is greatly compensated by the advantage that with the vitamin a "physiological" substance is introduced into the body that is usually present in food and in intraorganic humors. It can also be administered in therapeutic doses for an indefinite period without harmful effects to the patients. The fact that the blood of these two sisters belonged to different groups indicated that methemoglobinemia is independent of the blood group character.—*J.A.M.A.*

ALLERGIC TOXEMIA IN INFANCY*

BERNARD L. LIPMAN, M.D.**

Philadelphia, Pa.

The allergic origin of diseases such as bronchial asthma, hay fever, urticaria, atopic dermatitis and certain types of the celiac syndrome are familiar to most physicians, particularly those who see many children in their practice. It is the purpose of this paper to present several cases of an allergic syndrome that is rather uncommon but which should be considered when confronted with infants who present baffling episodes of fever, apathy, lethargy and vomiting with or without overt evidence of allergy.

CASE REPORTS

Case 1. A 4-month-old white male had a history of febrile episodes occurring once or twice a week since the age of three weeks. The first instance of fever occurred several days after the baby was taken off breast milk and given an evaporated milk formula. His temperature rose abruptly to 104°F. within twelve hours, and persisted for five days, accompanied by sneezing, coughing and hoarseness. It resisted conventional therapeutic modalities but all symptoms and signs promptly subsided when cow's milk was withdrawn from the diet, and soybean milk was substituted. The mother subsequently noted that when wheat was introduced into the diet, the baby developed projectile vomiting, and a generalized rash occurred when the various strained fruits were added to the diet.

Family History. The mother and father both have severe perennial sinusitis.

Physical Examination was that of a normal, healthy, well-developed and well-nourished infant of the stated age.

Clinical Course. The baby was admitted to the hospital for evaluation. In order to exclude any infectious origin of the symptoms, a complete clinical workup, including an excretory urogram, blood and urine cultures and spinal fluid examination were performed, all with normal results. The peripheral blood smear

*From Pediatric Service "B," Albert Einstein Medical Center, Robert A. Schless, M.D., Senior Attending Pediatrician. Permission was granted for the study of the above cases by Doctors Joseph Bloom and Robert A. Schless.

**Associate Professor of Pediatrics, Hahnemann Medical College, and Albert Einstein Medical Center, Philadelphia, Pa.

showed 5 percent eosinophiles. A provocative trial test of cow's milk was given and within 8 hours after a single feeding of cow's milk, the temperature rose to 104°F. The fever dropped promptly to normal within 24 hours. A few selected skin tests were done and corroborated the diagnosis of allergic toxemia.

Scratch Tests:

Cow's milk	1 Plus	Oats	0
Wheat	0	Goat's milk	1 Plus
Egg white	0	White potato	1 Plus
Orange	0	Control	0
Soybean	0		

Intradermal Tests:

Wheat	2 Plus	Soybean	0
Egg white	0	Control	0
Orange	0		

Case 2. An 8-month-old white male was breast fed for 5 months. At 3 months, a single supplemental feeding of evaporated milk was given; his temperature promptly rose to 103°F.; the baby became very listless, pale and vomited. All cereals were subsequently taken satisfactorily, but when strained vegetables were added, a recurrence of the toxic symptoms was produced by carrots, squash, green beans, peas, sweet potato. Strained fruits, meats and synthetic multivitamins yielded no symptoms. Typical allergic symptoms referable to the skin and respiratory tract were never present.

Family History was negative.

Physical Examination was entirely normal. The peripheral blood smear showed 5 percent eosinophiles.

Selected skin tests were performed with the following results:

Scratch Tests:

Cow's milk	4 Plus	Chocolate	0
Goat's milk	4 Plus	White potato	0
American cheese	3 Plus	Soybean	0
Tuna	2 Plus	Tomato	0
Orange	2 Plus	Carrots	3 Plus
Salmon	0	Green beans	3 Plus
Oats	0		

Subsequent Histories. Both infants have been free of allergic toxemic symptoms with carefully supervised diets.

SUMMARY

Two case histories of infants who manifested symptoms of profound toxemia due to food allergies were presented. These were corroborated by both provocative trial diets and skin testing. The extreme accuracy of the latter procedure was rather unusual and denotes the presence of strong skin sensitizing antibodies or reagins which frequently are not present in early infancy. Nevertheless, it is worthwhile, from a diagnostic standpoint, to perform selective skin tests of the common foods in infant diets. Intradermal tests were not done in the second case because of the violent local reaction to the allergens in scratch testing.

8261 Temple Road.

OPHTHALMIA NEONATORUM. H. L. Ormsby. (Canad. M. A. J., 72:576-580, April 15, 1955). In a study of 8,418 newborn infants there were three cases of gonococcic ophthalmia among 1,703 receiving two drops of Sulmefrin solution in each eye at birth, one among 3,125 receiving one drop of 1% silver nitrate solution, and none among 1,570 receiving one application of 10% sodium sulfacetamide ointment. Among 2,020 infants receiving no prophylaxis at birth there were five cases of gonococcic ophthalmia. Mild chemical conjunctivitis was seen in most infants receiving 1% silver nitrate prophylaxis. This cleared within 48 hours, and no other sequelae were observed. Inclusion conjunctivitis occurred in each series and did not appear to be influenced by any of the prophylactics. All cases of this disease ran a benign course, and many cleared spontaneously without treatment. The intramuscular injection of penicillin into the mother during labor would seem to be the best prophylaxis of gonococcic ophthalmia in the infant, but the danger of hypersensitivity reactions prohibits routine use of this method. The same difficulty applies to treatment of the infant with intramuscularly administered penicillin. It is concluded that, although certain new areas of therapy, such as the use of prophylactic agents in ointment base, are worthy of study, the time-tested procedure of applying 1% silver nitrate solution to the conjunctival sac at birth is an efficient prophylactic against gonococcic ophthalmia.—*J.A.M.A.*

PRESENCE OF ADULT CONTACTS IN INFANTILE SEBORRHEIC DERMATITIS*

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Unna¹ originally brought together the various elements of what we today consider the seborrheic dermatitis syndrome and considered the disease to be identical in infants and adults. Since his original contribution, differences of opinion have developed as to whether seborrheic dermatitis does occur in infants. Becker and Obermayer² consider the latter to be an exudative type of infantile eczema, a skin response to food allergy caused by overfeeding the infant. Others, such as Urbach and Gottlieb,³ as well as Hill⁴, deny the allergic concept of infantile seborrhea, yet regard dietary management of great importance.

Unna's original concept was based on finding various organisms in cultures and scrapings which he considered to be of etiological significance in seborrheic dermatitis. McKee and Cipollaro,⁵ Moore, Kile, Engman, Jr. and Engman⁶ likewise feel that seborrheic dermatitis is the result of an infection and incriminate *pyrosporum ovale* as the causative agent. Successful culture and inoculation experiments with this organism have been reported by Moore, et al.⁶ as well as by MacLeod and Dowling.⁷ Ormsby and Montgomery⁸ say there is much, both in clinical experience and laboratory findings, to commend the theory that the disease is of parasitic origin.

We feel that seborrheic dermatitis should not be included in the infantile eczema group, and that it is not part of an allergic entity in infants. It is true that seborrheic dermatitis is often associated with other skin conditions and in the infant especially with chronic disseminated neurodermatitis (atopic eczema), and we, as well as others who have observed and treated these cases, have at times had difficulty in differentiating the seborrheic dermatitis from the associated chronic disseminated neurodermatitis. In all probability, this is one of the reasons that seborrheic dermatitis in the infant has been so often included in the past in the infantile eczema group.

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In the present study, which comprises 17 successive cases of infantile seborrheic dermatitis (Table 1), each infant was attended by an adult also suffering from the same condition. It has been our impression that it is rare to observe an infant with seborrheic dermatitis without finding seborrheic dermatitis in the adult who

TABLE 1. *Summary of Observations on Seventeen Infants with Seborrheic Dermatitis.*

Case	Age (Months)	Sex	Distribution of Lesions	Diseased Adult Contacts	Remarks
1	3 weeks	M	Scalp, cheeks, chin	Mother and father: seborrheic dermatitis of scalp	
2	2 months	M	Scalp, cheeks, ears, chin, neck	Mother: seborrheic dermatitis of scalp	
3	6 weeks	F	Scalp, face, arms, trunk	Mother: seborrheic dermatitis of scalp	
4	3 months	F	Cheeks	Mother: seborrheic dermatitis of scalp	
5	1 month	F	Scalp, ears, chin, cheeks	Mother: seborrheic dermatitis of scalp	
6	5 weeks	F	Cheeks, chin	Mother: seborrheic dermatitis of scalp	
7	13 days	M	Scalp, forehead, chin, cheeks, neck	Mother: seborrheic dermatitis of scalp	
8	10 weeks	F	Cheeks, chin	Mother: seborrheic dermatitis of scalp	
9	4 months	M	Scalp, nasolabial folds, cheeks, chin, neck	Mother and father: seborrheic dermatitis of scalp; father of eyelids.	
10	2 months	F	Scalp, face, behind ears, cheeks	Nurse: scalp, nasolabial folds, eyebrows	Father and mother did not have it.
11	6 months	M	Cheeks, chin	Father, seborrheic dermatitis of scalp.	
12	8 months	M	Scalp, cheeks, chin, neck	Grandmother: seborrheic dermatitis of scalp	Parents not available.
13	9 months	M	Scalp, face, neck, back	Mother: seborrheic dermatitis of scalp.	
14	4 weeks	M	Scalp, face, especially cheeks	Mother: seborrheic dermatitis of scalp (severe).	
15	10 months	F	Scalp, cheeks, chin, behind ears	Mother: seborrheic dermatitis of scalp.	
16	10 weeks	F	Scalp, cheeks	Mother: seborrheic dermatitis of scalp.	
17	3 months	M	Scalp, cheeks, chin	Mother and father: seborrheic dermatitis of scalp.	

attends the child if a careful check is made of such contact. Sutton and Sutton⁹ also remark that a history of probable transmission is frequently obtained. Among the 17 cases herein reported, one child was cared for by the grandmother who had seborrheic dermatitis of the scalp, and another child by a nurse. The parents of the infant cared for by the nurse, neither from case history nor from our observation, had seborrheic dermatitis. The nurse, however, had seborrheic dermatitis of the scalp, eyebrows and nasolabial folds. Clinically, the infectious theory has much to recommend itself as being etiologically significant in the development of seborrheic dermatitis in the infant.

It has been our policy to prescribe treatment for the adult with seborrheic dermatitis who cares for the child, as well as for the infant. (The use of selsineum sulfide has been very helpful in controlling seborrheic dermatitis in most adults.) In instances where the adult in attendance is unable to or does not control his seborrheic dermatitis, we suggest that the infant be kept from coming in contact with this adult.

SUMMARY

Seventeen successive cases of seborrheic dermatitis, in which both infant and some adult member in attendance had the disease, are herein reported. It has been our observation that seldom do we find a case of seborrheic dermatitis in infants where an adult, in contact with the infant, does not have an associated seborrheic dermatitis. Simultaneous treatment of both the infant and adult with seborrheic dermatitis appears to improve our therapeutic results.

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RUMINATION

A CASE REPORT

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Rumination is a pernicious habit of food regurgitation and re-swallowing. The symptom complex is designated as rumination because of the resemblance of the phenomenon to that occurring in ruminant or cud-chewing animals. It is not especially injurious when the food is re-swallowed, but may become alarming if it is consistently spit out. The habit may follow the repeated occurrence of simple regurgitation or the vomiting from disease processes, especially pylorospasm. Rumination is not recognized so frequently, nowadays, as a pediatric problem as in the past.

CASE REPORT

October 30, 1954. Newborn female infant, weight 8 pounds 5 ounces, Para III. No abnormalities noted at birth. Newborn period uneventful except for a mild urticaria. Went home on fifth day, weight 8 pounds 3 ounces.

December 6, 1954. At 5 weeks, mother reported baby vomiting breast milk, weight 10 pounds 2 ounces. Placed on a cow's milk and dextrin formula, then dryco; metopine and scopolamine and a thick rice cereal formula were tried.

December 8, 1954. Baby was hospitalized, x-rayed and the typical symptoms of pyloric stenosis were found. Large doses of antispasmodics caused no amelioration of symptoms.

December 13, 1954. A modified Ramstedt operation was done; the infant recovered uneventfully and was dismissed 5 days after operation with a weight of 9 pounds 8 ounces.

January 26, 1955. At 3 months, weight 12 pounds 11 ounces. She had been receiving an average infant's diet, i.e., cereal, vegetables, fruits and dryco.

March 2, 1955. At 5 months, she was put on whole milk from dryco and immunizations were begun.

April 6, 1955. At 7 months, weight 20 pounds, 2 teeth, small post-cervical glands and a stuffy nose.

August 4, 1955. Age 9 months, telephone complaint of vomiting.

This was during a heat wave, extra salt was given and the milk was skimmed and boiled.

August 10, 1955. The spitting continued and patient was put on syrup of thorazine, 10 drops before meals.

August 11, 1955. Dryco feeding and a half teaspoon of syrup of thorazine before meals. The next day, at 9½ months, weight 20 pounds 8 ounces, 28¼ inches, 8 teeth, no sign of illness.

August 15, 1955. Still spitting, "keeps coming up." The spitting up does not seem to be related to finger-sucking or air swallowing as the fingers are not put into the mouth until the food has been regurgitated into the pharynx. Hospitalized and a gastrointestinal x-ray was done, as well as of the skull and of the chest.

SUMMARY

Negative upper gastrointestinal series including esophagus. Negative chest and no diagnostic findings in the skull. Eye-grounds were negative.

August 17, 1955. The patient was put on elixir metropine and scopolamine, 15 drops before meals, her feeding changed to homogenized milk, and sent home. Her blood count was hemoglobin 70 percent, RBC 4,190,000 and WBC 9,850.

August 22, 1955. Still spitting. Put on antrenyl pediatric drops.

September 2, 1955. Office—20 pounds 1 ounce, reddening of gums around incisors was noticed. New medication prescribed—elixir donnatal, half teaspoonful increasing to 1 teaspoonful three times a day before meals and ascorbic acid 50 mgm. daily. Elixir reserpoid was tried, the feeding changed to sobee and injections of B₁₂ (the panacea) were given.

September 19, 1955. About this time, by exclusion, we had given the name rumination to the illness. Weight now was 18 pounds 15 ounces. Three days later, September 22, 1955, fearing that rumination was not quite the whole story, the child was sent to Buffalo Children's Hospital, under the care of Dr. William Orr. The diagnosis of rumination was confirmed. At first she was placed on an infant's diet without restrictions and promptly lost 5 ounces.

Dr. Orr reported: "I had an opportunity of watching the child during one of her episodes of 'spitting up' and then mouthing the food before she spit it out. I do not feel that her vomiting is due to any allergy or physical abnormality."

She was placed on phenobarbital, gr. $\frac{1}{4}$ given 5 times daily, a thick cereal feeding and did fairly well while hospitalized. This seemed to take care of the condition; the phenobarbital was withdrawn and she went 24 hours without vomiting. Very small amounts of fluid were given with a medicine dropper and were retained. She was discharged and returned home.

September 24, 1955. Next day we received a telephone call stating the patient was back and vomiting. Again she was put on phenobarbital, but the spitting continued.

October 15, 1955. At 18 pounds, 5 ounces, lytren was given by rectum. This, at first, was too concentrated and caused purging. Lactofort was added to the cereal; nembutal suppositories given for rest at night.

October 22, 1955. Weight now 17 pounds 14 ounces. Sustagen was added to the diet. At this time, the child was rather apathetic, dehydrated, was breathing heavily and had red cheeks and lips. Her fluid intake was ridiculously small according to all standards of her requirements. She was given three injections of probanthine and dramamine (banthine 25 mg. dissolved in 1 cc. dramamine.) This seemed to help at first and was repeated, but with negative results.

October 27, 1955. Her weight went up to 18 pounds, 4 ounces. Liver soup seemed to upset her, and, at this time she was re-hospitalized. We considered using Mead's plastic feeding tube to keep her going. She was given saline and 2½ percent glucose by clysis every 6 hours and then daily. Her hemoglobin was 76 percent, RBC 3,500,000, WBC 12,300. Urine chlorides, 10 gms. for 100 ml. The nurses stated that if they were able to distract her, walk about and show her various toys, she would not vomit. It was thought that the mother was partly responsible, and at the suggestion of a psychologist, she was removed.

Various mechanical aids were discussed such as tying the jaw by means of a cap with tapes. This was not considered too seriously as we feared she might aspirate vomitus. She contracted an upper respiratory infection and was given penicillin. At its conclusion, because of possible benefit, her nose was packed with cotton. A recurrence of the upper respiratory infection occurred and the packing was removed. Our next step proved the best to

date. This was a gr. 1 quinine capsule inserted in her sustagen and the tide seemed to change. The theory is that the child soon learns that food spit up is very bitter and will stop the ruminating. For sedation, the patient was put on pamine and phenobarbital. Her diet consisted of sustagen, mainly. Her blood count improved, hemoglobin 83 percent, RBC 3,700,000 and WBC 6,900, and she returned home. Her weight increased to 19 pounds 4 ounces.

At home the sustagen was gradually withdrawn, pamine and phenobarbital stopped; the quinine was reduced to twice a day. Her last weight was 21 pounds. She had begun to improve.

COMMENT

The interesting, yet nerve-wracking fact, was the very minimal fluid intake that appeared to be compatible with life and a certain well-being. The patient's mouth was moistened with a medicine dropper from time to time. She received possibly 3 ounces of water daily. In retrospect, I think that possibly the feeding tube would have helped maintain hydration, if it had been available. However, by the time it was received, we were off on another tack, quinine, which seemed to be the answer. From the medical point of view, the case was especially discouraging, having gone through the early pyloric stenosis. As different feedings, regimes and drugs were tried, we wondered: Is the rumination the only symptom, or is there something else—mental? Is this an endo-theliosis, or, something unusual? Is this just rumination, and if so, how serious can it become? When will it stop? Abt stated that "in severe cases, the mortality will range between 25 percent and 50 percent.

The diet of sustagen proved so successful with its vitamin content and iron, that a transfusion was thought unnecessary. The red cells and the hemoglobin increased over the previous count when there had also been decided dehydration.

The mother's day to day reactions, her hopes and fears which she did not always verbalize, were of interest. With two other children at home, she still had time to care for the ruminator. There was such heartache and despair, as well as so much work with the actual nursing and the constant cleaning up that it was felt that the mother, rather than the doctor, should write up the case.

Illness in the home disrupts family life and, since we are concerned with the entire family, the mother was given an opportunity to publish her notes. In fact, this is our reason for reporting the case. At a staff meeting, free consultation was resorted to, a psychiatrist suggested that the mother didn't want the vomiting to stop. Continuous support was given to the mother by her obstetrician.

The father spent considerable time transporting the child to and from hospitals. "Something's got to be done" was his typical paternal reaction.

The Mother's History of Case. Baby began vomiting at 4 weeks, very thick, of the consistency of cottage cheese. A pediatrician was called, medication prescribed but did not help. Stopped breastfeeding, and tried several formulas. The condition continued, and there was a halt in weight gain. The child was admitted to the hospital for x-rays; on the fifth day, was operated for pyloric stenosis. She recovered fully, gained weight and to all appearances was perfectly healthy.

June 1955. Eight months old, weight 22 pounds 3 ounces, on a diet of whole milk, cup-fed, junior baby foods with the addition of some table food, such as baked or mashed potato, showed no interest in eating toast, crackers, and such. Began vomiting, not forcefully nor gagging, but bringing up one mouthful at a time. Vomiting followed no pattern; might start immediately following a feeding, continue until and through the next feeding, and often during the night.

July 1955. Concerned, but not unduly so. Regarded the condition as the child's reaction to an extreme heat wave combined with teething. Began to realize how much of her food the baby was losing by the increased number of changes of clothing daily, as well as bedding and bibs.

August 1955. Called a pediatrician when we noticed the loss in weight. The child began to refuse some of her food. The change to cooler weather, and a few new teeth brought no change for the better. First it was thought that she was having a recurrence of the pyloric stenosis. Began with the first of many prescriptions, though none seemed to help. In succeeding order, the parents tried these changes in her diet: skimmed milk; no milk, powdered milk.

On August 12, 1955, the child had a complete examination. "Nothing organically wrong", was the diagnosis, nevertheless we were afraid that the child would choke or aspirate in her sleep. On August 16, the infant was taken to the hospital for observation and x-rays. The surgeon who had performed the early operation also examined her, and read the x-rays. No diagnosis was made.

At home again, the child smelt perpetually sour from spitting mouthful after mouthful. At an age when she was creeping, rolling and sliding around, it was impossible to watch her continuously. Left alone for a little while in the play-pen, crib or on the floor, she would be covered with sour, sticky vomitus, on hair, clothing and self, as well as the rug, bedding or play-pen. Under doctor's care we tried one new drug after the other; we tried taking milk out of her diet completely, substituting weak tea, beef consomme and later a soy bean milk, however, none proved satisfactory.

On September 2 we took her to our doctor again for an examination, and the trouble was diagnosed as "rumination". What caused it; what to do for it? She did not appear to be a nervous child nor highly excitable. Since she appeared to be in no pain, was not nauseated, could it be a habit? At this time a specialist examined her for head and brain pressure. Luckily there was none. He began working on possible vitamin deficiencies, prescribing iron drops, vitamin C tablets, vitamin B₁₂ shots; but still without results, the parents were in turn relieved, and concerned as each new possibility was eliminated.

On September 19 an appointment was made for the following day with Dr. Orr in Buffalo, New York. He examined the child briefly, heard her history and weighed her (slightly over 18 pounds, or a loss of 4 pounds since onset of vomiting) and sent the child to Children's Hospital. We were fortunate in securing a private room to accommodate child and mother during her entire stay. Upon arrival, the infant was examined by several resident physicians; spent the entire day following in the X-ray Department where she was fluoroscoped and x-rayed from head to toe, roentgens were taken hourly to watch solutions pass through her system. The next morning, the x-ray series were completed, and blood tests were taken. Doctors reached the same diagnosis, "rumination". Along with medication to relax her, she was put

on a diet of thick, cooked cereal with little or no fluids, and they became encouraged when this resulted in a marked decrease in the amount of food brought up. Upon the eighth day at the hospital, the child was discharged as she had lost practically no food for 4 days and showed a weight gain of several ounces. The doctor suggested that she remain on this diet for approximately 3 weeks, and then to add other foods gradually and in very small amounts.

October 1955. Upon returning home, instructions were followed implicitly, and as long as 4 days at a stretch passed without the loss of any food. She continued to bring it up into her throat, but reswallowed it with a peculiar movement of the tongue, almost a "lapping" movement. We had noticed that she did not chew nor swallow her food in a normal manner—basing normalcy upon the comparison with our other children—and that fluids definitely aggravated the condition immediately. She showed a weight gain of about 8 ounces in one week, only to lose it the next week. Her condition became much worse. We cut down on fluids again, to have her become dehydrated and feverish. Fluids were given rectally which seemed to help considerably until she became sore and irritated. In constant touch with our pediatrician, we tried various fluids, medication, injections, etc., until we felt our little girl was somewhat of a guinea-pig. Perfectly willing to try anything to bring this situation under control, we hoped, by trial and error, to arrive at the correct formula.

November 1955. The condition persists; child looks sick, and her weight has dropped to 17½ pounds. On November 3, we again went to the hospital where they began to replenish the fluids in her system. Working from a psychological standpoint, that possibly new environment, with strangers feeding her, and little contact with familiar individuals including her parents, would make a change in this stubborn habit; forcing her to forget any fears or tension which we might transmit to her.

After months of constant care and attention, it was extremely hard to remove ourselves almost entirely from her life, and to face the idea that our own attitude and love for her might be the harmful element. This, too, we can only try and hope it will lead to a complete recovery and normal life again. (Mother is a little sorry for herself and pleading here. Understandably so.)

December 1955. After 17 days of hospitalization, we are home again. Child has gained weight and is much stronger. Although her diet is still somewhat limited, she does spit some, though not often and small amounts. We finally begin to feel that she is approaching normalcy and behaving like a mischievous "13 monther" should. We have cut down on the quinine gradually, but find that she cannot do without it entirely. We have changed from the sustagen which change she does not like. By trial and error, we learn which foods are more upsetting than others, and have gradually changed over to milk, which she takes fairly well, in small amounts. There have been a few bad days when it seemed we were starting all over again, but we still feel that the worst is past and that with time and patience she will overcome the condition completely.

Office Nurse's Observations. Returning to work after an extended vacation, it was quite a shock to have the mother call and say that her baby "was still spitting", knowing that this same baby had had a pyloric stenosis. In the ensuing days, many such reports, usually unfavorable, were relayed to the doctor and much research and inquiry carried on in an endeavor to find a solution to the problem. The persistent thought of acidosis, bowel obstruction, tumor or brain injury kept coming to mind.

SUMMARY

A recent case of rumination in a child, previously operated for a pyloric stenosis, is reported with comments by the mother and office nurse.

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PEDIATRICS AT THE TURN OF THE CENTURY

From time to time the Archives, which was the first Children's Journal in the English language, will reprint contributions by the pioneers of the specialty over fifty years ago. It is believed that our readers will be interested in reviewing such early pediatric thought.

DENTAL CARIES AS A CAUSE OF DISEASE IN CHILDREN. PREVENTIVE MEASURES— DENTAL CLINICS*

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In a recent paper Osler says: "If I were asked to say whether more physical deterioration was produced by alcohol or by defective teeth, I should unhesitatingly say defective teeth."

The American dentist has always held a high place in his specialty. Perhaps it is partly on that account that the American physician has given so little attention to the teeth. Certain it is, that as a possible cause of other diseases of the body they have been very much neglected.

In 1891 Miller tabulated 149 cases in which serious complications resulted from diseased teeth, many of them ending fatally. This was seventeen years ago, and the list was admittedly incomplete.

In rickets, syphilis and tuberculosis we have examples of constitutional diseases which may cause characteristic changes in the teeth. Scurvy, diabetes and leukemia frequently present characteristic changes in the mouth. These and many oral diseases could be advantageously studied by the physician and dentist together. Such a combined study would probably yield valuable results.

In the analyses of constitutional diseases associated with oral changes, it is important not to confuse cause and effect. These changes may be primary, but more frequently they simply represent one manifestation of the constitutional condition.

*Read before the Society of Medical Inspectors of New York, April 8, 1908.

At the time of writing this paper, the author was Attending Pediatricist at the Lebanon Hospital; Clinical Assistant in Pediatrics, Vanderbilt Clinic, New York.

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Diseases which may result from an abnormal condition of the teeth:

- (1) Diseases of the tooth itself.
- (2) Diseases of adjacent structure, gingivitis, pyorrhea alveolaris, alveolar abscess, periostitis, ostitis, necrosis.
- (3) Different forms of stomatitis, including ulcerative and gangrenous stomatitis. Tonsillitis.
- (4) Diseases of the maxillary sinuses.
- (5) Diseases of the cervical lymph nodes. Cellulitis (Ludwig's angina).
- (6) Diseases of the alimentary tract.
- (7) General infections. Septicemia. Pyemia.
- (8) Diseases of the blood. Disturbances of nutrition. Nervous diseases.

I shall discuss briefly only a few of these, which are of special interest to the pediatricist.

It is remarkable that the presence of carious teeth as a factor in the causation of stomatitis has been so little emphasized. Ulcerative stomatitis does not occur where there are no teeth, namely, in early infancy and old age. The process usually begins as a gingivitis around a carious tooth, then spreads to the adjacent buccal mucous membrane. Carious teeth alone are not sufficient, for many persons have decayed teeth without stomatitis. But given certain, as yet unknown, physiological changes in the tissues and the specific microorganisms penetrate and multiply. The lowered vitality of the tissue is an essential factor. When the ulcerative lesions occur on the tonsils they are of the same character. In all probability the specific organisms are carried to the tonsils in the act of swallowing. They become lodged in the deep crypts, and there find the conditions favorable for their growth.

The Cervical Lymph Nodes. Odenthal examined 987 children, between the ages of three and twelve, and found that 70.7 per cent. had enlarged cervical nodes. Of 267 who had no enlargement only 5 had caries. Starck found 80 per cent. with enlarged nodes. Between six and nine years they were seldom absent. In 41 per cent. of those with enlarged nodes no other cause except caries was found.

For the purpose of this study the cervical lymph nodes may be divided into three sets:

(1) Those along the posterior border of the sternomastoid muscle, which drain the lymphatics from the posterior portion of the head and the nasopharynx.

(2) Those around the angle of the jaw, which drain the tonsillar and pharyngeal region.

(3) The submaxillary and submental, which drain the region of the tongue, lips and jaw.

Most of the writers who have discussed the relation of carious teeth to the enlargement of these nodes have not indicated clearly which set they found enlarged. For our purpose the nodes along the sternomastoid muscle and those at the angle of the jaw may be disregarded since their enlargement is due almost exclusively to infections of the tonsils, pharynx and nasopharynx. During the past six months I have examined 1,200 children between the ages of five and eleven with special reference to this point. In over 95 per cent. the submaxillary nodes were palpably enlarged. If the head is flexed on the chest they may be readily felt, varying in size from a pea to an almond. The most common situation is about one inch anterior to the angle of the jaw, just outside below or inside the body of the jaw. Sometimes only one is felt; more frequently two or more.

There are but two processes which are so constant that they could cause an enlargement of the nodes in such a large percentage of cases, namely, dentition and dental caries, with its associated conditions. In every case of dental caries I found these nodes palpable. In a very small percentage of cases they were enlarged without any apparent cause, but it must be remembered that these nodes may remain enlarged long after the source of infection has disappeared. It is possible that the hyperemia and slight injury to the gums at the time of the eruption of the teeth may be sufficient to cause such an enlargement. The nodes are more distinctly palpable in those cases in which the edge of the tooth is carious, so that a slight gingivitis is produced by contact with the gum. The absorption by the lymphatics takes place *not* from the cavity of the tooth, but from the mucous membrane.

Digestive Disturbances. Carious teeth and painful gums mean imperfect mastication. The food is not thoroughly chewed and mixed with saliva. The first, and a very important, part of

the digestive process is improperly performed. As a result of insufficient action of the muscles of the jaw, the normal flow of blood and lymph to the parts is diminished and their development impaired. Particles of food remain lodged in the carious teeth, and decomposition takes place. The microorganisms of putrefaction grow and multiply, and these, together with their products, are swallowed and may cause digestive disturbances. However, this has not been conclusively proved. It is possible that the gastric and intestinal secretions render them harmless, when they are not in too great number.

General Infections. A number of well authenticated cases of septicemia and pyemia, with the primary focus of infection around a diseased tooth, have been reported by Miller, Hunter, Godlee, Owen and others.

In the future all such cases will probably be more carefully studied from a bacteriological standpoint, blood cultures made, and the identity of the organism found in the blood and mouth demonstrated. The subject is certainly an extremely important one and deserves careful study by the physician and dentist.

Diseases of the Blood. Malnutrition. The strongest advocate of pathological conditions of the teeth as a cause of anemia is Hunter. He believes that even certain cases of pernicious anemia are due to a chronic infection from the gastrointestinal tract which has its origin in diseased teeth (oral sepsis).

Imperfect mastication, with imperfect digestion and assimilation, lead to malnutrition and anemia. Wallis investigated this subject in one of the English schools. He says: "I found that in the vast majority of cases those who had the worst teeth showed a proportionately bad physical development"; and, "in nearly every case these children were below the average in mentality." Though few will doubt the truth of these statements, it is questionable whether the relation is entirely one of cause and effect. Many other factors must be considered. Children with carious teeth and unsanitary mouths are more likely to belong to the poorer parents. These children are more apt to have insufficient food improperly cooked, and more likely to live under unhygienic conditions in small, imperfectly ventilated rooms. Again, the parents would be more ignorant and the children less intelligent by

reason of their inheritance and home training. In order to determine with something like scientific accuracy what effect carious teeth and unhealthy mouths have upon the production of anemia and mental and physical backwardness, a group of children having marked dental caries and malnutrition should be chosen. They should be weighed, measured and the percentage of hemoglobin determined twice with an interval of say two months, in order to obtain an accurate idea of their development and rate of growth. The mouth should then be put in a thoroughly healthy condition without any change being made in the diet or mode of life, and after the lapse of two or more months another determination of the size, weight and hemoglobin made.

Nervous Diseases, Neuralgia, Headache, Tics, Epilepsy, Neuritis. I should like to mention briefly two points: The habit of drawing air through a carious tooth, in order to dislodge particles of food, may be the starting point for a tic. Several writers have claimed a relation between dental caries and epileptic attacks. Wallis noted the number of attacks in the inmates of an English asylum. The teeth of these patients were then put in perfect condition. There was no marked diminution in the number of the attacks. Such an experiment shows the importance of caution in drawing conclusions.

The Relation of the Teeth to Tuberculosis. The prevention and cure of tuberculosis is, to a great extent, a question of nutrition. Proper nutrition is impossible without proper digestion and assimilation, which, in their turn, are largely dependent on thorough mastication.

At no time is the food factor so important as in infancy and childhood.

Tuberculous Cervical Adenitis. Can the tubercle bacillus by gaining entrance to a carious tooth reach the adjoining lymph nodes? By many writers this is considered a frequent occurrence. However, a study of the literature shows that this is comparatively rare. Partsch, in reporting a case in 1904, reviews those previously reported, and concludes that they are all more or less doubtful. Stark reported 5 cases, 3 of which he himself considered only probable, the remaining two Partsch does not accept. According to the latter, two points are essential: (1) The proof

that the node primarily affected received its lymphatic supply from the diseased tooth, and (2) the destruction of the tooth pulp. It must be remembered that tubercle bacilli are rarely found in the cavities of carious teeth in cases of pulmonary tuberculosis, although the sputum may contain them in abundance. This is explained by the fact that other organisms are present in so much larger numbers that they use up all the available nutritive material, the tubercle bacillus being, so to speak, starved out. Besides, the tooth pulp has no direct lymphatic connection with the adjoining lymph nodes. With the most improved technique Stahr and Ollendorff failed to demonstrate such a connection.

The possibility of tuberculous infection by way of the teeth requires further study. Westenhoeffer believes the infection frequently takes place through slight injuries to the gums, which occur at the time of dentition. It is also interesting and important to remember that, according to Czerny, the submaxillary and submental nodes are more frequently the site of tuberculous changes than any of the other cervical nodes.

Relation to Infectious Diseases. Just how much the presence of carious teeth and an unhealthy mouth predispose to the infectious diseases it is difficult to determine. It would be important to investigate whether the tubercle, the diphtheria and the influenza bacilli, the pneumococcus and the meningococcus are found more frequently in such mouths, and whether they find there conditions favorable for their growth. It is often assumed that they do. But we have already mentioned that for the tubercle bacillus this is extremely doubtful.

It is a matter of daily observation that the presence of carious teeth and the neglect of the mouth during the infectious diseases often lead to disagreeable forms of stomatitis. The lowered vitality of the tissues probably plays an important part. A slight injury or abrasion of the mucous membrane caused by carious teeth may serve as a point of entrance of infectious material, including that of the exanthemata.

Percentage of School Children Having Dental Caries. This is given by various authors as from 70 to 95 per cent. During the last six months I have examined 1,200 school children between the ages of five and eleven. The majority of these were not of

26 HERRMAN: *Dental Caries as a Cause of Disease in Children*

the poorer class, so that the results obtained are favorable. Only caries which was visible during the ordinary inspection of the mouth is included, no mirror or probe being used. Examined in this way, dental caries was present in 72 per cent. No marked difference was noted in the sexes. The highest percentage was found in children between seven and eight years. However, in judging the amount of change from the normal, we must add the number of teeth lost to the number of carious teeth.

Statistics based upon such an investigation have been compiled by English authorities. They show that as the children grow older there is a progressive diminution in the percentage of children having a sound set of teeth.

Age.....	4-6	7-9	10-12	13-15	16-18
Number examined	744	1,716	3,071	2,376	268
Defect temporary only	67.4	43.3	18.3	5.1	0.1
Defect permanent, 1-4	8.8	41.5	55.9	51.9	37.3
Defect permanent, 5-8	—	1.9	8.5	22.9	32.6
Defect permanent, 9 or more...	—	—	1.2	6.0	23.6
Sound, no decay	23.8	14.2	16.1	14.1	6.4

In the examination of these children (between the ages of five and eleven) I have been struck by the rarity of fillings. Certainly many teeth extracted might be saved. I appreciate the fact that the parents often object to the expense, and the dentist may be forced to extract against his better judgment, but I think all will agree that more conservatism is indicated. In some instances children with carious teeth have gone to a dentist and have been told that there was no use doing anything as the teeth would fall out anyway. I believe the best dentists do *something*—filling if possible, extraction if necessary.

In order to get an idea of the percentage of children who take regular care of the teeth, I questioned 1,446 children between the ages of eight and fifteen. Of these, 236 brushed the teeth regularly twice a day, 602 once a day; the remaining 608 did not brush the teeth at all.

It must be remembered that these children were not of the poorest. The results are a little too favorable, but taken as they stand they show that 42 per cent. neglected the care of the teeth altogether. The results also show that the older children are more careful than the younger, and especially the older girls more care-

ful than the older boys. Of the total number not 5 per cent, received regular dental treatment.

Much time is needlessly lost by absence on account of tooth-ache or diseases resulting from the teeth. On inquiry, I found that among 1,030 pupils, during a term of 100 school days, 157 had been absent from one-half to fifteen days, with a total of 205 days lost. Much more was lost by the younger children.

Preventive Measures. It has been said that "the prevention of dental disease in children is a better study than its treatment." The health of the mother during pregnancy and lactation should receive due consideration. The infant should be given the breast if possible. If this cannot be obtained, mixed feeding or carefully regulated bottle feeding. The effect of improper feeding on the teeth is well illustrated in the case of rickets. Older children should receive a carefully selected diet, including food which requires thorough mastication. The fine American flour has been held accountable for much of the increase in dental caries. From the age of three the teeth should be examined every six months and treated if necessary. Attention to the temporary teeth insures good permanent ones properly placed. If there is nasal obstruction this should be corrected. The teeth should be brushed night and morning, all surfaces being included, with especial attention to the molars. The mouth should be washed out after each meal and the particles of food removed.

If a cavity has formed it should be filled immediately, not waiting until the tooth becomes painful. Such prophylactic measures would be much more frequently carried out if school children were given a little elementary instruction in the hygiene of the mouth. Such instruction can be made more interesting and intelligible by the use of illustrated charts. (Jessen.)

In a few classes in which the teachers were giving such instruction, I found that the percentage of pupils who were brushing the teeth regularly was *far* above the average.

Dental Clinics. America has the honor of having founded the first college of dentistry in the world (at Baltimore in 1839). But in the establishment of dental clinics for children we are far behind. Germany has now over thirty such clinics, and other European countries have at least one in their larger cities. Pro-

fessor Jessen's clinic, at Strassburg, demonstrates what can be done at a comparatively slight expenditure.

In New York there are at present ten dental clinics. Of these, five do extractions only. With two exceptions those which do other work are closed after school hours and comparatively few children are treated in any of these clinics, so that I believe it may be safely stated that at present there is no adequate provision for the treatment of the children of the poor. They may have every other disease treated in our medical clinics except this most widespread of all.

At one of the industrial schools of the Children's Aid Society, Dr. Wheeler organized a dental clinic about one year ago. It shows what can be done with comparatively modest means. In a small room at the top of the building about 800 cases are treated annually. The work is done by practicing dentists, who give their services gratis, each being in attendance one afternoon a week.

In various places the following methods of solving this dental problem have been tried, and all have been failures, more or less: (1) Practicing dentists, interested in philanthropic work, have offered to treat poor patients in their office gratis. (2) A certain number of dentists have been paid by the city to treat such patients at a definite time each day. (3) The members of dental associations have volunteered their services, taking turns in treating cases. After a time they found themselves unequal to the sacrifice. (4) Dental departments attached to regular medical clinics. Unless the dentists are salaried such clinics are not likely to be successful. The work, unlike the medical, is more or less of the same kind, and the practicing dentist is apt to find that he cannot spare the time.

In none of these methods is there any direct connection with the school system, therefore it is impossible to control the treatment of cases. In only one way can such a clinic be successfully operated—it must be under municipal control. It should be organized and conducted along lines similar to the present hospital for the treatment of trachoma. "Diseases of the teeth, like other diseases, must be sought out, not left to declare themselves." The children should be regularly examined in school. Those who are unable to go to a private dentist may be referred to, and treated at, the clinic, permission being obtained from the parents.

The clinic should be open after school hours and on Saturday. Each child should be provided with a card, on which should be noted the name, the date on which it attended the clinic, and the date on which it should return for treatment. In this way the school authorities could also control the attendance. At the clinic some instruction in the care of the teeth could be given, with demonstrations in the method of cleansing the teeth. The new dental clinic at Strassburg occupies the same building as the free baths. A similar plan could be followed in this city.

Cost. Jessen estimates that it costs about one mark (25 cents) per child. In New York the cost would be somewhat greater. A liberal estimate would be 50 cents for each child. As an experiment a clinic with a capacity for treating 20,000 children could be conducted at an expense of \$10,000 annually. This would include the salaries of four dentists and two nurses. There are about 300,000 school children in the Borough of Manhattan. Of these, approximately 100,000 are *poor* children, who require such dental treatment; but at present not 10 per cent. of these voluntarily seek treatment, so that at the beginning one such clinic would be sufficient. If successful, branch clinics could be established in other parts of the city.

INDICATION FOR STIMULANTS IN PEDIATRIC PRACTICE*

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Laennec was the first to call attention to pathological changes of the heart in acute fevers; he found, postmortem, softening and fragmentation of the myocardium.

Virchow's classical researches on parenchymatous inflammation of the heart advanced the knowledge of cardiac impairment in acute inflammatory diseases; while to Hayem belongs the credit of having first described interstitial myocarditis; he also mentions

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At the time of writing this paper, the author was Chief of Children's Department, Mt. Sinai Dispensary, New York City.

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a productive endarteritis of the coronary arteries with thrombosis, which occasionally caused sudden death in typhoid fever. A perusal of the literature makes it appear that a great deal of attention has since been paid to the morbid changes in the circulatory apparatus in the acute fevers. The work done in the last few years by Romberg, Paessler, Rolly, Wiesel, Ortner and many others has brought about a better understanding in the matter, possibly on account of improved methods of examination; facts have been brought out which in the future must influence therapeutic methods.

Postmortem examinations on a very large number of cases—from one-half to sixteen years of age—by Wiesel have shown that the walls of the arteries become, very frequently, diseased in the course of various infectious diseases like measles, scarlet fever, diphtheria, influenza and typhoid. In typhoid he found the changes of the arteries constantly, often more so than in the heart, which sometimes would escape.

Wiesel believes that sudden death in infectious disease is occasionally caused not so much by a diseased heart muscle as by disease of the blood vessels.

The early occurrence of arterial changes is also shown by clinical observations. Paessler and Rolly point out that the onset of circulatory disturbance in diphtheria is characterized solely by the paralysis of the vasomotors, with loss of arterial tension; this is compensated by an increased heart action; the more pronounced the paralysis of the vasomotors, the more active the heart action.

Similarly Ortner believes that in typhoid the vasomotor nerves suffer earlier in the disease than the heart, which compensates for the atony during a shorter or longer period and only shortly before death becomes paralyzed; death ensues, not from cardiac failure and not from vasomotor paralysis alone, but because both become paralyzed simultaneously. From these investigations it appears that the indications for the use of cardiac stimulants are mainly empirical.

A great many diseases of childhood run a typical course; they have a tendency to recover with any, or perhaps in spite of, treatment; the outcome of disease is not so much the result of choice of drugs as dependence on the virulence of causative factors and individual resistance; for instance, we have no drugs to accelerate the

crisis of pneumonia or to avert a complicating empyema; besides, in the child with more active processes of metabolism the diseased organ has a greater ability for repair than in adult life. Nature herself is a great therapist. Whenever infectious disease attacks the system, antitoxins and antibodies are prepared in the blood for the elimination of hostile bacteria and the neutralization of their toxins; and the principal duty of the physicians is not so much the prescribing of drugs—though even in our progressive age the practitioner may find it difficult to do without them in private practice—as to give the patient the benefit of good hygienic and dietetic treatment and to give relief for urgent indications; in short, to place the patient in the most favorable condition and assist the defensive agencies of the system to overcome the deleterious effect of disease; not to remain indolent and indifferent; not expectant but symptomatic treatment.

The promise of recovery from disease depends greatly on the relative integrity of the heart muscle; and the prevention of cardiac impairment, which threatens the child even more than the adult, is one of the main duties in the management of systemic disease of childhood; this is to be accomplished not so much by giving cardiac stimulants early at the outset of the disease as by avoiding drugs which have a depressing effect on the heart or such as derange the stomach. Flatulency or distention of the abdomen will seriously interfere with the heart action, as will any other measure which unduly excites the patient. Only when weakness of the heart becomes evident are heart stimulants indicated; the aimless administration of digitalis or strophanthus and especially alcohol is not advisable, and often harmful.

It would be difficult, and hardly possible to determine exactly the choice and dosage of stimulants in the treatment of diseases of childhood. There are many therapeutic variations dependent on individual tolerance, and since we do not treat the disease, but the individual, it must be left to the judgment of the physician to select the suitable treatment; only general indications may be outlined.

I believe that alcohol is one of our best heart stimulants. Children tolerate alcohol generally very well, and I should not like to do without it at the bedside of the feverish child. If, however,

a healthy child be taken ill with a lobar pneumonia, alcohol is no more indicated in the first few days than in the first few days of most acute fevers; it will, however, be required when the strength of the little patient is depressed and the pulse is compressible and soft—between 120 and 130—usually in the pre-critical stage. It may be earlier needed when the pneumonic process complicates any of the systemic diseases, or in protracted illness, and mainly during defervescence and convalescence; it should be given in moderate dose only, in the form of good brandy or whiskey; to a child of one year about 2 to 4 grams every three hours; to an older child—three to four years—double the amount. It is well to dilute it sufficiently with water or milk. If there be an intolerance to spirits, tokay, sherry or decarbonated champagne may be substituted for them. Most beneficial is alcohol in septic cases with asthenia. Here it may be used in very large quantity without unpleasant effect, no stupor or intoxication following; the heart action improves and with it the general condition of the child. Cases of erysipelas, with profound sepsis in the infant, are often influenced as little by external applications as by antistreptococcic serum, and generous doses of alcohol and camphor seem to be the only remedy to resort to. As another instance where heroic doses of alcohol may be required, I should like to mention profound sepsis in children ill with diphtheria and the septic varieties of scarlet fever. Such an experienced observer as Jacobi says: "Here it is almost impossible to give too much—6 ounces of whiskey daily to a child when 1 or 2 fail, and 10 or 12 when 6 fail." Kerley mentions a child of fourteen months, ill with diphtheria, that took 4 ounces of brandy in twenty-four hours without showing signs of intoxication.

At the onset of signs of cardiac weakness in acute fevers, shown by weakened first sound, accelerated pulse rate and reduction of arterial tension, besides alcohol the use of digitalis, strophanthus or strychnin is indicated. Children tolerate digitalis, though occasionally even small doses derange the stomach. It is necessary to control carefully the physiological action of the drug and discontinue its use at the proper moment. Cumulative effect is more prone to occur in children than in later life. As it takes some time before its influence is manifested, it will not be used if quick effect

is wanted. It may be given in the form of a reliable tincture of digitalis—often very unreliable—1 drop for each year of the child three times a day, or in the form of the fluid extract, which has to be given very carefully—to an infant of a few months about μ^{1}_{10} every three hours. Some prefer the tincture of strophanthus, which is somewhat similar in its action to digitalis; it has no cumulative effect and may be used for a longer time.

One of the most useful drugs in combating myocarditis, cardiac irregularity with a moderately soft and intermittent pulse, is strychnin; it may be given alternately with whiskey per os. A child of one year will bear gr. $\frac{1}{200}$ three times daily; for a child of two to three years the dose may be increased to gr. $\frac{1}{150}$ to gr. $\frac{1}{100}$ three times a day. If the condition is more serious or advancing, it should be given hypodermically and the drug should be pushed until symptoms of the physiological action, such as slight twitching of the muscles of the face and the backs of the hands, make their appearance. Strychnin is somewhat contraindicated in great excitability of the nervous system and if there be any tendency to convulsions.

Digitalis is very useful in the treatment of chronic cardiac disease; it should, however, not be given indiscriminately as routine treatment, only when signs of failing compensation appear, such as rapid pulse, dyspnea on slight exertion, oliguria and edema. It is important to give the drug in comparatively large doses until its effect is evident. If the pulse rate is lowered, the edema disappears and the kidney secretion increases, it should be discontinued temporarily, to be given again after an intermission; in its place another heart tonic may be exhibited, like caffein. This is an excellent drug, but sometimes causes sleeplessness; it may be given in a daily dose of $\frac{1}{2}$ to 1 grain for each year. In this manner digitalis may be given if needed for a longer time, always alternating it every four to five days with another stimulant. Long continued use of digitalis in small doses is not commendable in the treatment of chronic heart disease in children.

In children with congenital heart lesions, with communicating ventricles, the administration of digitalis may prove injurious, as with greater efficiency of contraction of the left ventricle a larger amount of blood will be thrown into the right side and aid in

impeding the pulmonary circulation. It should be used very carefully only when signs of myasthenia become evident, with constant dyspnea and very small radial pulse.

Recently two new preparations of digitalis have been recommended as especially valuable in pediatric practice by Hochsinger and others—digitalis dialysate and digalen, both of reliable and constant effect; both may be given in milk or other liquids, or if the stomach be intolerant in microclysma.

Regarding the dosage of Golaz's Digitalis Dialysate, Hochsinger recommends 6 to 10 drops *per diem* during the first and second year; in older children 30 to 40 drops *per diem*; this to be continued for a few days only to get the full effect. In cases where digitalis treatment should be continued for longer time, he gives 2 to 3 drops to young children and 10 to 15 drops *per diem* to older children.

In extreme cases of heart failure, either in the early or later stage of diphtheria, scarlet fever or any other infectious disease with weak and indistinct heart sounds, very feeble pulse, labored respiration and attacks of syncope, immediate relief is required and full doses of cardiac stimulants may be given—strychnin, caffein, camphor and whiskey. Sometimes several drugs may be given in combination. Care must be taken that the stomach be not deranged. Camphor is an excellent drug; it rapidly increases the strength of the heart action and is best given hypodermically, in 10 to 20 per cent. solution in ether or sterile olive oil; ether acts even more quickly than camphor, and when quick effect is required ether may be first given and camphor afterward. Strychnin is most useful and very prompt in its action; it should be given hypodermically in doses large enough to produce symptoms of its physiological action; with it caffein may be given, also very valuable in combating weakness of the heart. In order to afford relief to an enfeebled heart muscle and restore the circulation in certain urgent cases when pharmacotherapy fails, we may resort to physical measures of treatment, namely, venesection and hypodermoclysis.

In a group of cases of pulmonary inflammation we have to deal with a weakness principally of the right side of the heart. A small and soft arterial pulse may indicate not so much an inability of the left ventricle as an overcrowded pulmonary circulation. The left

side does not receive enough blood from the lungs. The insufficiency of the right ventricle is made evident by cyanosis and deficient peripheric circulation, with cold extremities and impairment of respiration.

As has been pointed out by Dr. A. H. Smith, the use of digitalis at this time will serve to throw more blood into the pulmonary circulation and help paralyze the over-tired right heart. Relief may be attempted by giving nitroglycerin. By its effect upon the vasomotor nerves the blood pressure is lessened and peripheric vessels dilated; thus, the overcrowded lesser circulation may be relieved. Nitroglycerin may be given to a child of one year in the dose of gr. $\frac{1}{500}$; to one of four years gr. $\frac{1}{200}$; three or four times until an effect is produced.

These cases call also for the use of oxygen, or, better, a hyperoxygenated atmosphere, as soon as there is impairment of respiration or, earlier, in the presence of cyanosis.

If, however, circulation cannot be restored by these measures, and life is threatened from paralysis of the heart through over-dilatation of the right ventricle, in these extreme cases, as *ultimum refugium*, a vein may be opened for the withdrawal of blood. The euphoria following immediately proves, without doubt, that venesection acts in these cases mainly mechanically, by relieving the impeded circulation; but it will depend on the eventual restoration of the feeble heart muscle whether the relief afforded will be temporary only or permanent.

In an article on "Venesection in Children," Baginsky compares the relief afforded to the overburdened heart and the restoration of the blood passage through the heart and the lungs with the restoration of respiration by tracheotomy and intubation in stenosis of the larynx.

Venesection is again gaining in favor. According to Baginsky, Heubner and others blood-letting may be resorted to in the presence of vital indications, even in the very young, with good results. Most frequently, however, it is indicated in older children in the second half of childhood.

Gregor reported a case from the pediatric clinic in Breslau where venesection was performed on an infant six months old, with double pneumonia and threatening heart insufficiency; the child recovered.

The opening of the vein in the young child is somewhat difficult on account of the amount of fat in the subcutaneous tissue, and the small calibre of the cutaneous veins. According to Heubner children will bear the withdrawal of $\frac{1}{10}$ of the entire blood, which again forms $\frac{1}{13}$ of the body weight—about $\frac{1}{130}$ of the body weight.

As another vital indication for venesection in children, Baginsky mentions uremic symptoms, which may occur in the course of nephritis with suppression of urine, delirium, convulsions and coma, with flushed face and high arterial tension. The nitrites may be employed and rectal injections of normal salt solution, but in severe attacks valuable time must not be lost. Baginsky and Heubner recommend blood-letting at that time as a life-saving measure. According to Heubner 100 to 200 grams may be withdrawn in older children; and Schick and Renault advise that the venesection be repeated if the uremic convulsions return. The withdrawn blood may be directly replaced by saline infusions of 100 to 200 grams. The effect on the patient is very marked. The convulsions cease and consciousness returns; the infused saline solution dilutes the poison, relieves the renal congestion, and is a powerful stimulant to kidney secretion.

A few words more on hypodermoclysis—last, but not least—a therapeutic measure of great value, which deserves to be used more frequently in pediatric practice. Our modern text-books on diseases of children hardly mention it at all, or devote *apropos* a few lines to it.

Hypodermoclysis renders toxins circulating in the blood less effective; it supplies much needed water to the system. At times, when it may be impossible to give it per os or per rectum, it stimulates the action of the heart and raises arterial tension. According to the studies of Cohnheim and Gruetzner it stimulates the action of the gastric and salivary glands, and also has a stimulating effect on the action of the kidneys, thus aiding in liberating the system from toxins. Saline infusions are indicated after hemorrhages, such as may occur after ritual circumcision or in typhoid; they are helpful in oliguria, in chronic nephritis, in infantile atrophy, and in the severe form of summer diarrhea, and especially in infants with cholera infantum, with profuse and exhausting evacuations and constant vomiting, with slow circulation and threatening thrombosis. In this condition, hypodermoclysis is an excellent and

frequently life-saving measure. Nor can we gain the same advantage by giving the solution through mouth or rectum, as the mucosa has at this stage a very limited capacity of absorption. To a French physician, Luton, of Reims, belongs the credit to have first made use of it in the treatment of cholera infantum in 1885. He reported to have saved the life of an unfortunate child by injections of saline solutions. In Germany they were used by Monti in 1887, and he as well as Epstein, Heubner and others reported excellent results.

Heubner injects 150cc. twice daily. He mentions that he has made as many as 16 to 20 injections in one infant, often with the best results. The fluid for the injection may be a sterile 1 per cent. salt water solution; or, instead, natron chlorat, 5; natron bicarbonic, 5; aqua, 1,000.

FATAL POISONING IN CHILDREN. (*Lancet*, London, 2:809, Oct. 25, 1952). Slade reports on three children who died as the result of poisoning. The first child, a girl of 18 months, died about 15 hours after she had consumed about eight 5-grain tablets (2.4 gm.) of acetylsalicylic acid (aspirin). Seven hours after ingestion the child vomited. No early symptoms of poisoning were noted. The second child, aged 21 months, had swallowed pills of iron and quinine sulfate. When her mother noticed her swallowing a pill, she gave her syrup of figs. A doctor, who could find nothing wrong with the child half an hour later, prescribed syrupus ipecacuanhae, but the child died in convulsions two hours and 15 minutes after she had swallowed the quinine pills. At necropsy the stomach contents contained 3 grains (0.2 gm.) of quinine sulfate together with three undecomposed pills. The third child, a girl of 16 months was found at noon putting to her mouth a box containing tablets of anthallan® (3-dibutylaminomethyl-4,5,6-trihydroxy-1-isobenzofuranone). Shortly afterward she began to retch and vomited a little after having been given some warm tea. Then convulsions developed, and the child died at about 1:30 p.m. It was estimated that the child had consumed about six tablets. Absorption was probably hastened in case 2 by syrup of figs and in case 3 by warm tea. When there is a strong possibility that a child has swallowed possibly poisonous tablets, action should be taken to empty the stomach, and nothing should be given by mouth that could hasten absorption.—*Journal A.M.A.*

BOOK REVIEWS

SPLENIN A IN RHEUMATIC FEVER. By Alvin F. Coburn, M.D., Lucile V. Moore, M.D., Judith Wood, M.D. and Mary Roberts, R.N. Cloth. Pp. 87. Price \$3.75. Springfield, Ill.: Charles C. Thomas, 1955.

This small volume is in the nature of a preliminary report on the use of a new substance called Splenin A, derived from the spleen in the treatment of rheumatic fever. This substance was used on a total of 47 children with varying degrees of acute rheumatic fever over a three-year-period and the results obtained so far are summarized and evaluated. As the authors state in their concluding remarks: "It is hoped that this limited study will stimulate further investigations into the relationship of the spleen to inflammation. The possibility that the spleen enters into the mechanism of rheumatic fever deserves further exploration."

MICHAEL A. BRESCIA, M.D.

TALKING WITH PATIENTS. By Brian Bird, M.D. Cloth. Pp. 154. Philadelphia: J. B. Lippincott Company, 1955.

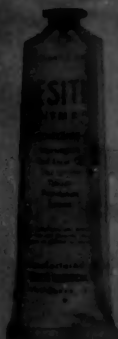
This small book is divided into two parts, the first of which is devoted to the problems of adults and the second to the problems of communication with children. How to converse with one's patients, and particularly refractory children, is a most difficult chore at times and it seems to me a faculty which each one either develops properly to a high degree or never develops it. This is the sphere in which the personality of the individuals involved and the particular problem at hand play a most important part. Although it is interesting to read the author's particular approach to his patients and might show the pitfalls of speech to the medical neophyte, it nevertheless is the author's method and so remains. The most difficult moment the medical attendant has is the approach to the bereaved and dying patients. In these two instances, at least, I like to seek religious consolation and guidance for the patients and interested parties which the author does not even mention. This one instance only demonstrates what was mentioned previously, that each one of us develops his own approach to patients.

MICHAEL A. BRESCIA, M.D.

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A Beech-Nut agricultural expert inspects squash grown under contract for Beech-Nut Strained and Junior Foods.

Beech-Nut Control starts *in the field* to safeguard Baby's Food

Baby Foods are more than a business... they are a cause to which Beech-Nut is dedicated.

The Beech-Nut system of quality control starts in the fields and orchards. Inspections are made by our agricultural experts during growing and at harvest so that only the finest produce will reach our plant.

Beech-Nut has pioneered in protecting babies against toxic residues from insecticides. It has spent hundreds of

thousands of dollars in research and food testing to make sure Beech-Nut Foods are safe for babies.

In the Beech-Nut plant scientific control by our staff of food chemists assures Baby the fine flavors and abundant nutrients he needs for happy mealtimes and healthy growth.

We give you our pledge that no pains are spared to make Beech-Nut Foods the very best that can be offered to the babies under your care.



You are cordially invited
to visit the
Beech-Nut Baby Food Plant
at Carmel, N. Y.